Chapter 1
Introduction

1-1. Purpose

This manual provides guidance and criteria for the design of small water supply, treatment, and distribution systems. For the purpose of this manual, small water systems shall be those having average daily design flow rates of 380 000 liters per day (l/d) (100 000 gallons per day (gpd)) or less. However, the use of the term small is arbitrary, there being no consensus in the water supply literature with respect to its meaning. Regulations regarding the acceptability of a water source, degree of treatment required, and the monitoring requirements are not based on flow rates, but rather on a water system classification relating to the number of people served and for what period of time. Figure 1-1 provides a flowchart for system classification. Refer to Chapter 3, paragraph 3-4*b* for the appropriate nomenclature.

1-2. Applicability

The provisions of this manual are applicable to USACE commands concerned with water source development and the design of water treatment and distribution systems for civil works projects. The provisions of Army Regulation 200-1, Environmental Quality: Environmental Protection and Enhancement, shall be adhered to during the design of any civil works activity under the jurisdiction of the U.S. Army Corps of Engineers.

1-3. References

Required and related publications are listed in Appendix A.

1-4. General Considerations

a. Background. Historically the U.S. Army Corps of Engineers has been concerned with providing potable water to the public at its various recreation facilities. The passage of the Safe Drinking Water Act (SDWA) of 1974 (PL 93-523) (U.S. Congress 1974) and its subsequent amendments has placed new constraints and requirements on all sectors of the water supply industry and has resulted in a continuing critical review and reexamination of the entire potable water supply system from initial source development to final delivery at the user's tap. This process is taking place in an atmosphere charged with intense public interest in the complex relationships that apparently exist between environmental quality and public health and against the backdrop of actual or potential water shortages in many locations. The reauthorized SDWA (August 1996) requires Federal agency compliance. It requires that any Federal agency comply with the SDWA in the same manner as all other drinking water systems. Under the reauthorization, sovereign immunity would be waived to allow citizens and states to seek penalties for violations at Federal facilities.

b. Emphasis. This manual provides information of interest to planners and designers of small water systems. Such systems generally cannot benefit from economies of scale, and proper management and operation are critical to produce satisfactory finished water quality. Therefore, the major emphasis of the manual is on the design of systems that will be effective and reliable, but that require a level of operation and management activity commensurate with their physical size and the available resources. To this end, consideration is given in subsequent chapters to preliminary planning, source selection and development, water quality and quantity requirements, treatment, pumping, storage, and distribution. Throughout the manual an effort is made to focus on requirements and standards, key design elements, and generalized alternative design methods and their applicability. Thus, comprehensive step-by-step design procedures are not presented. Rather, appropriate references are identified in the text and listed in Appendix A.

c. Intended use. The design of any water system depends on many factors, not the least of which is the intended use of the finished product. The information presented herein applies most directly to the design of systems to supply potable water to the public at Corps recreation facilities. However, the manual should be of interest and use to planners and designers of other small water systems such as those that may serve small communities, highway rest areas, camps, and state parks.

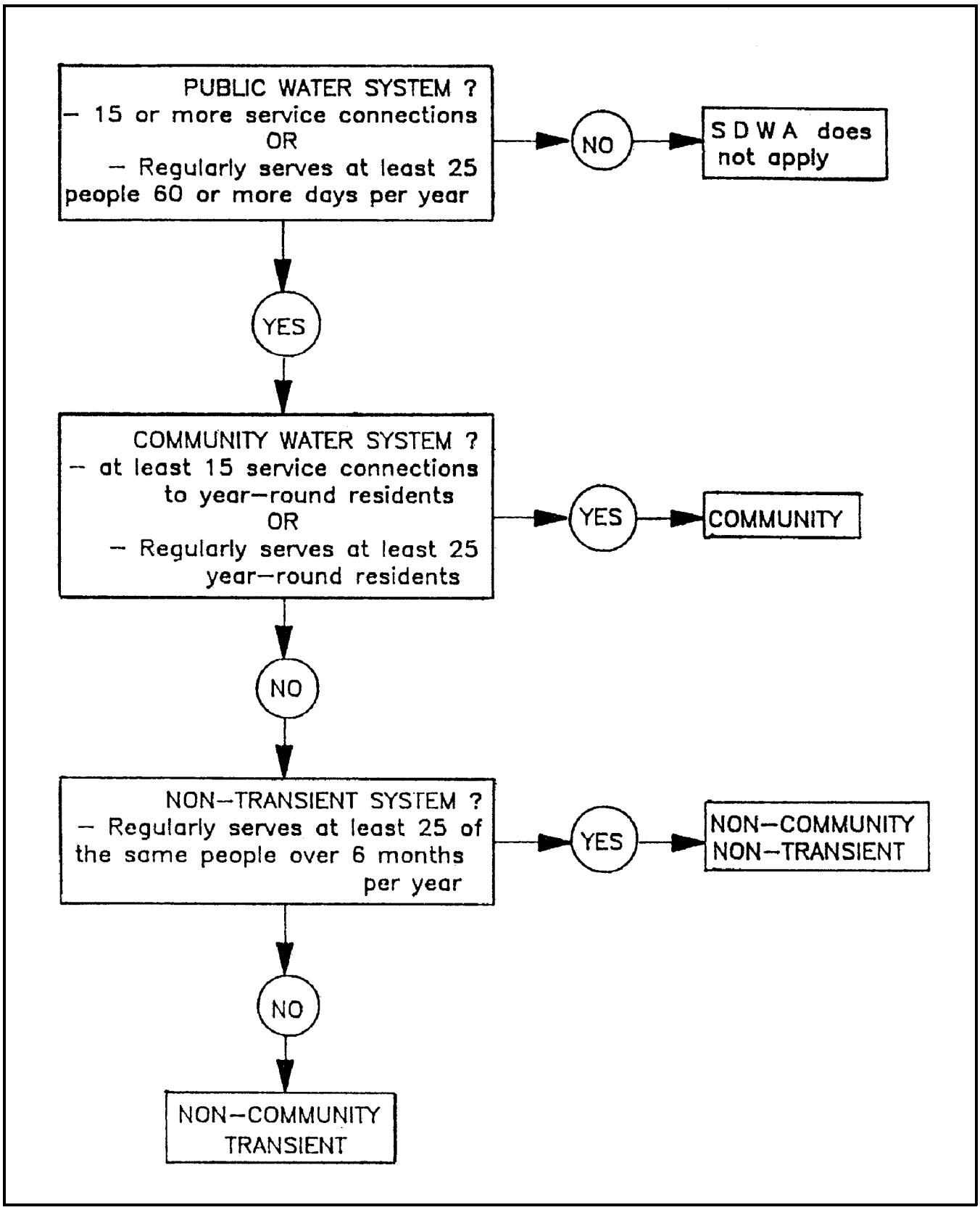

Figure 1-1. Water system categories